DESCRIPTION OF HOW THIS ANFO SYSTEM WORKS

This ANFO delivery system differs from other delivery systems in many ways. First it has an open to atmosphere hopper instead of a pressurized tank. Next it uses vacuum and the angle of repose of the ANFO product to supply the delivery system. This whole system can be cleaned with water without removing any of the system parts. This is how it works.

A - This is the hopper it is built with 6061 aluminum and has an open top for loading and cleaning. This hopper bottom has a slopped panel of two thirds of that area and is the angle the products repose plus 5% to keep the flow of ANFO moving to the delivery suction and lift tube. This suction and lift tube is built from 11/2" schedule 40 pipe and is 60" long.

B - This is the product flow control chamber. This chamber has holes in the sides to allow the ANFO to be drawn down to the suction tube in a controlled rate. This flow rate can be controlled by changing the size of the valve opening on the vent pipe. Causing an air currant to pass through the control chamber and changing the lift vacuum inside of this chamber.

C - This is the venturi that is the hart of this system. The venturi nozzle can be adjusted to produce the best control vacuum by moving it in or out in respect to the stagging areas cone shaped delivery outlet.

D - ANFO delivery tube is built from pipe and is 1" schedule 40 pipe and is 4" long. The delivery hose is attached here and is used to move the product to the blast hole drilled into the mine wall.

E - The air control valve will control the speed that the ANFO will be moving to the blast hole. The packing of ANFO into this blasting hole is very critical and can be adjusted by changing the incoming air pressure.

F - Vent control. This control will change the low pressure or vacuum in the control chamber this will control the amount of product that will be sucked up by the lift tube. This vent tube is made from ½" schedule 40 pipe and is 54" long. The vent is controlled with a ½" ball valve.

G - Staging area. When the ANFO is sucked up into this area it will be percolating and then the ANFO will be sent through the delivery tube at a very fast speed to be packed into the blast hole. The staging area is made from a 2"X 2"X 1 ½" TEE. With the lift tube threaded into the bottom, the venturi nozzle threaded into one side with it's adjustment and the delivery cone threaded into the last hole.

PMS INC.
DENNIS PERKINS

Mike this is the ANFO delivery system that we talked about. I have tried this venturi out here at my shop and it works well. I didn't have any ANFO to use but I used some oil dry. The weight of this oil dry is about one and one-half of the ANFO and it is very angular in shape. The horse power needed from my air compressor was about seven. This gave me a steady flow of material. I have not built the hopper yet because we need to talk about how we can test this system with ANFO at your mine. I hope that we can try this out soon.

I would like to try using the radio controls that you have, with this system. I think that I would like to have two channels instead of one. Because I think we need a purge system to clean the holes at times.

I am not using a date on this because this is only a concept and not the finished ANFO system.

Thank You
PMS inc.
Dennis Perkins

6/24/03 Lucrezia C Robertson

LUCREZIA C. ROBERTSON
Notary Public, Van Buren County, Michigan
My Commission Expires June 5, 2005